# ZENITH

## *Carburetors*

BUILT FOR PERMANENCE — CALIBRATED FOR PERFORMANCE

# *Features of Construction and Operation*


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# The Zenith Carburetor

A carburetor is a scientific instrument designed to mix gasoline and air *in proper proportions* and to furnish this proportionate mixture to the engine under varying operating conditions.

It is essential to clearly recognize that the function of the carburetor cannot extend beyond the proportionate mixing of fuel and air. This knowledge will avoid many false leads in diagnosing so-called "carburetor troubles." Bear in mind the carburetor delivers the proper mixture into the manifold. The manifold carries this mixture to the cylinder. In the cylinder the mixture is compressed by the piston. While under compression, a spark from the spark plug ignites the fuel mixture. The explosion caused by igniting the fuel mixture causes the piston to travel downward in the cylinder, rotating the crankshaft, etc.

This seems to be carrying the subject a long way from the carburetor but we do so only to point out that all of these other parts of the combustion system can affect the results obtained from the fuel and air mixture which was prepared by the carburetor.

A simple carburetor is one having a fuel chamber, a single air entrance and a single jet (See Figure 1). Suction, created by the movement of the piston, causes air and fuel to flow through the carburetor into the engine. Each alternate downward stroke of the piston draws a fresh charge of mixed fuel and air into its own particular cylinder where it is compressed and exploded.

However, as the engine speed increases, the flow of fuel in response to the suction increases faster than the flow of air. Therefore, the mixture becomes too rich and there is no longer the perfectly balanced mixture which the engine needs.

More speed requires a larger quantity of fuel mixture, rather than a richer mixture. Many attempts have been made to overcome this tendency of the mixture supplied by the simple carburetor to become rich. The great variety of early carburetors was due to the diversity of means used to accomplish this purpose. Due to mechanical difficulties or sensitiveness to changeable atmospheric and temperature conditions, many of these devices have proven unsatisfactory.

The Zenith carburetor employs a direct and natural method of maintaining correct proportion of fuel flow to air flow in accordance with the suction. This is accomplished by an arrangement of the fuel jets to operate on a natural (rather than mechanical) principle.

To overcome the variation of flow through the simple jet which, you remember, allowed the mixture to grow richer under increasing suction, another jet was introduced. This was so arranged that it allowed the mixture to become leaner under increasing suction which was directly opposite to the action of the simple jet. Then these two jets were combined into one, the famous Zenith Compound Nozzle. We called the simple jet the Main Jet and we called the other jet the Compensating Jet because it "compensated" for the variations in the flow of the Main Jet. Thus, we obtained the desired result—a carburetor which delivers at all engine speeds a mixture containing exactly the right proportions of air and fuel.

In the accompanying illustration we are showing you the way in which these two jets function. See Figure 1. You will see that G, the Main Jet, is directly connected with the Fuel Chamber, F. Compare the Fuel Chamber to a bottle and the Main Jet to a straw. If you put a straw down to the bottom of a full bottle you will find that the harder you suck on the straw the more liquid you will get. The suction of the engine will act on the fuel in the bowl, through the Main Jet, in exactly the same way as your suction on the straw acts on the liquid in the bottle.

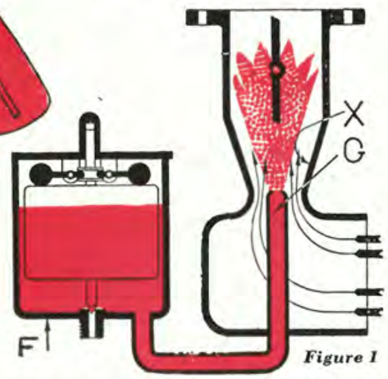


*Figure 1*

Now, look at Figure 2. You will see that I representing the Compensating Jet, empties into Well, J, which is open to the air. The Cap Jet, H, connects with this well. Compare the Well, J, to a glass, the Compensating Jet to a bottle, and the Cap Jet, H, to a straw. If you pour a tiny stream of liquid into a glass from a bottle you can only suck out of the glass as the tiny stream allows you, no matter how hard you suck on the straw. It is apparent, therefore, that regardless of the suction at the tip of

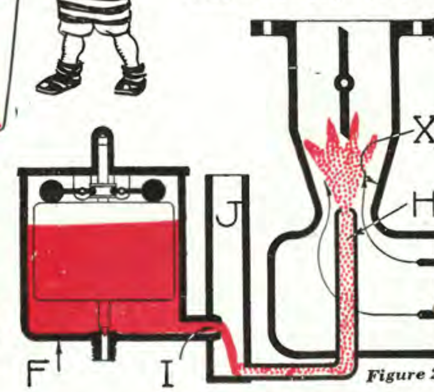


*Figure 2*

the Cap Jet, H, only as much fuel will be drawn through it as is emptied into the Well, J, by the Compensating Jet, I. From this it can be seen that as suction becomes greater at the end of the Cap Jet the amount of air drawn from the Well increases. Because the flow of fuel remains constant the *mixture* grows leaner with increasing suction.

Refer to Figure 3. Here you see Figures 1 and 2 combined. In this view Cap Jet, H, surrounding Main Jet, G, forms what we call "The Compound Nozzle." Combining the first jet, which gave more liquid under increasing suction, with the second jet which supplies a constant amount of liquid regardless of the amount of suction, you have a compound feed or nozzle. This permits the total flow of liquid to increase only within definite limitations and, we can bring the rate of flow absolutely under control, by varying the sizes of holes in the jets.

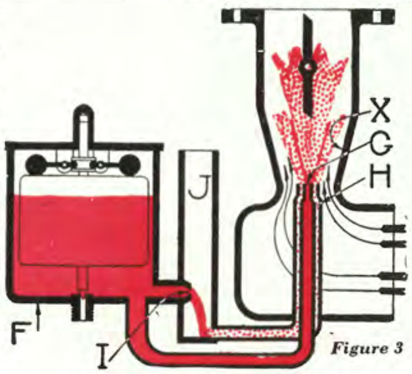
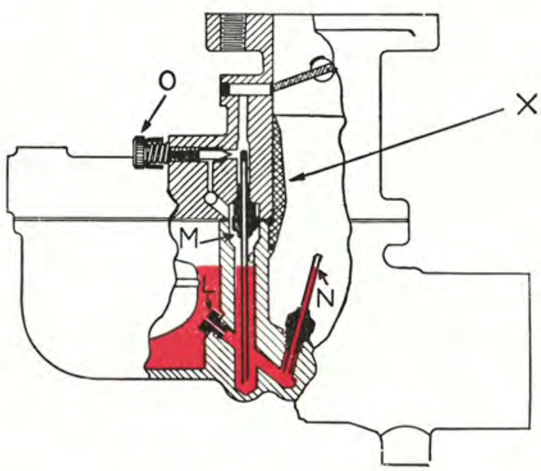


*Figure 3*




Under extremely low engine speeds there is insufficient suction at the end of these two jets to raise fuel from them. To provide a supply of fuel for idling, we added an auxiliary jet which we called the Idling Jet. This jet functions only when the throttle is just cracked open. The tube of the idling jet projects down into the well which is filled with fuel when the engine is at rest.

Cranking the engine causes a strong suction above the throttle and which draws fuel from the Idling Jet, M, through a channel which enters the main opening of the carburetor just at the edge of the throttle when the throttle is in closed position. Air mixes with this fuel in proportions determined by the position of the Idling Adjusting Needle Valve, O, and forms just the correct mixture for starting and idling.

In the foregoing we have explained the fuel system of the earlier models of Zenith carburetors and the basic system which will be found in every Zenith carburetor. Certain additional developments will be covered later but these fundamentals must be thoroughly understood to prepare for complete understanding of the more recent types.

In addition to the metering of fuel there must be a control of the air supply. The venturi measures the maximum amount of air which can be taken into the engine. The movement of the throttle governs the amount of air passing through the venturi.

With the development of the motor car engine and resultant changes in operating requirements, further development in carburetion methods became essential. Engines were speeded up; traffic conditions demanded fast acceleration; heated manifolds required leaner mixtures. All of which problems must be met by carburetion.

Extra fuel for acceleration and high speeds were provided for in our 110 Series carburetors as shown in Figures 4 and 5.

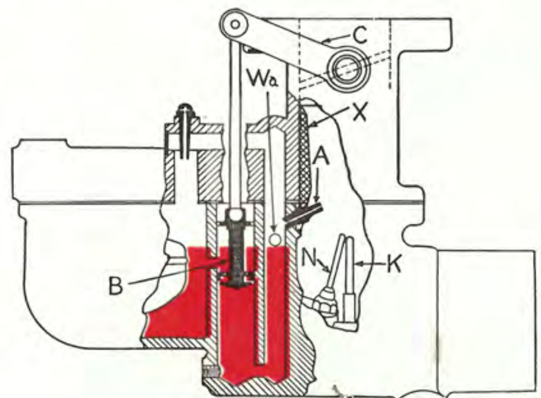


*Figure 4*

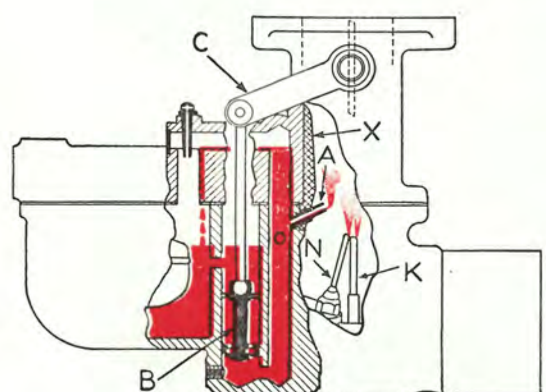


*Figure 5*

## ACCELERATING SYSTEM

The Accelerating Pump, B, forces fuel through the Accelerating Jet, A, when the throttle is suddenly opened and the reserve of fuel in the Idling Well,

W, passes out through the Cap Jet, N, all providing a measured amount of fuel for "quick throttle" and follow-up. The result is snappy and strong acceleration.

Too much fuel is about as bad as too little for acceleration. If the accelerating jet is too big the acceleration will be slow for the first few seconds, then will speed up. In such a case, of course, we put in a smaller accelerating jet. If the mixture is weak there will be a hesitation at kick-off and in extreme cases a spit-back. In this case we put in a larger accelerating jet.

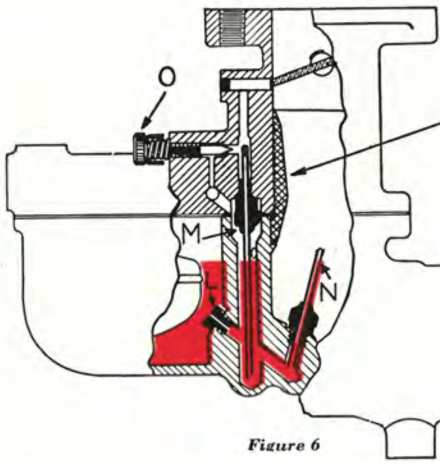


*Figure 6*

## When the Throttle Is Opened Slowly or Opened Rapidly a Short Way

Under these conditions little or no fuel will be forced through the Accelerating Jet nor will the Economizer Valve open. The fuel supply will come from the compensating well through the cap jet in an amount determined by the level of fuel in the well at time of throttle opening, and the size of the compensator; and through the main jet in an amount determined by the size of the main jet regulator.

To obviate the necessity of a large compensator for this kind of operation, we drilled a channel (Wa) connecting the pump and accelerating wells at a point 4 m/m above the normal fuel level line. The displacement of the pump will raise the level in the pump well so fuel passes across to the compensator well and provides a greater follow-up supply through the cap jet.

It is obvious that this gives control over the time, amount and follow-up of the accelerating discharge under all conditions.

## Part Two

This brings us to the present time, and we are going to give you a brief outline of the Zenith 150 Series. There may be some repetition of points previously covered but we have done so only to emphasize such information particularly.

Engines have been highly developed so they will run smoothly at 200 r. p. m., run faster than 4000 r. p. m., pull full load at 300 r. p. m., accelerate strongly and quickly from any speed up to maximum and do it all with a low consumption of fuel. As each kind of operation requires a different strength of fuel-air mixture it is obvious that only a well designed and constructed carburetor will amply meet the demands of the engine.

The carburetor depends entirely on the suction of the engine. Except for idling, the richest mixture is needed when suction is the lowest, and the least fuel wanted when suction is the highest. These opposing values must be reconciled in the carburetor design.

Acceleration, running at maximum speed and lugging up hills or through sand or mud requires a relatively rich mixture which must be supplied by the carburetor. Running over level roads with throttle partly open at from 25 to 50 m. p. h., does not require full power and a lean mixture may be used. Most driving is done at these speeds and if economy of operation is to be obtained the carburetor must automatically reduce the amount of fuel fed to the engine under this favorable lean running condition.

The engine must start and "warm-up" in sub-zero temperature and it must run smoothly and economically with summer temperatures of 90° to 100°. If air cleaners are used and accumulate dirt they restrict the amount of air supplied to the carburetor—yet the mixture supplied by the carburetor must be kept near the proper strength or bad economy, or even crankcase oil dilution will result.

The engine must operate not only on the level but on hills and sides of crowned roads. The carburetor must therefore function normally when tipped in various directions and varying distances from horizontal.

In summarizing, we submit the fact that the carburetor has a real job to perform and often under quite difficult conditions:

1. It must measure proper mixtures and amounts for

   A—Maximum power with wide open throttle.
   - a—for high speed on level road, or
   - b—for low speed pulling up hill, etc.,
   - c—for acceleration from low or medium speeds.

   B—A richer mixture for slow idle.

   C—A leaner mixture for part throttle operation.

2. It must operate on the level or on hills.
3. It must insure easy starting and good operation when cold.
4. It must operate properly when hot.
5. It must overcome air cleaner restrictions.
6. It must stay put under vibration and jars of rough road travel.

A graphical picture of carburetor mixture requirements is shown in Figure 7. Mixture ratios are given in per cent of fuel to air by weight. That is, a 6% mixture denotes 6 parts of fuel to 100 parts of air. The higher the percentage, the richer the mixture.

The mixture ratio is plotted against speed of the car. Referring to the graph, it is seen that with wide open throttle and full load the mixture ratio is about 7.4%, this being nearly the leanest mixture that will produce full power. A mixture ratio up to about 8½% will produce full power but will, of course, use considerably more fuel. This ratio holds fairly constant for all speeds except extreme low speed. Imagine your car running at maximum speed on the level with throttle wide open as at the extreme right hand end of the solid line. You come to a long hill and with the throttle held wide open the grade resistance pulls down the car speed more and more until you reach extreme low speed at the left end of the curve where it suddenly drops down to a very lean mixture of less than 5%. When it reaches about the 6 to 6½% mixture the engine will stall unless you shift gears. The reason for this is that the suction with low engine speed and wide open throttle drops so low that the slowed-up flow of air will no longer atomize and lift enough fuel to maintain the necessary richness of mixture for power development.

Now follow the broken line from "fast idle" down to the right and to where it rises and joins the solid line. Imagine you are on a level road idling at about 10 m. p. h., and then slowly open your throttle. The car speed will accelerate to 20, 30, 40 miles per hour, etc. At about 50 your throttle is nearly open and there is nearly a full load on your engine.

From about 20 m. p. h., up to 50 you are running on a mixture considerably leaner than when you were running with wide open throttle. At about 30 m. p. h. your fuel-air ratio is down to 6%, and holds about this value to about 50 m. p. h. These are usual road speeds and with this lean mixture your "miles per gallon" is considerably increased.

From 50 m. p. h. up your full load requires the 7.4% mixture, without which you could not obtain your maximum speed.

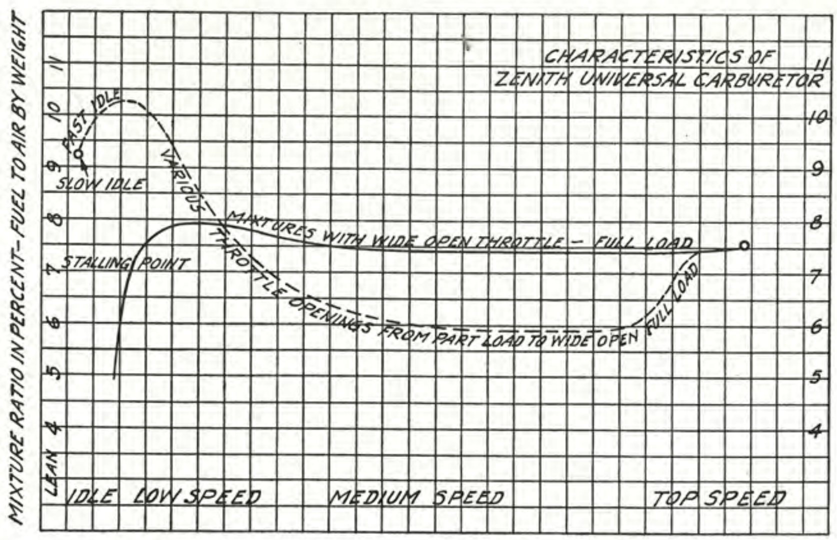



*Figure 7*

For idling the mixture ratio runs from 9¼% at low to 10¼% at fast idle. Distribution in the manifold is usually poor at idle speeds so the mixture has to be rich to ensure each cylinder getting a rich enough mixture. As the throttle is slightly opened to a fast idle the mixture is made richer to "strengthen" the transfer from the idle to the main and cap jets. This avoids a "flat spot" or a lean weak condition at this critical point of operation.

One of the principal requirements of present day carburetors is the ability to accelerate surely and rapidly. This is a full load requirement because your engine's accelerative ability is measured by the power it has in reserve over and above that being used to drive it at a given speed. Accordingly, your mixture must be that shown by the solid line, i. e., a full load mixture of at least 7.4% fuel to air. Imagine yourself driving at 20 m. p. h. Your mixture is about 6½%, too lean to accelerate. When you open your throttle the mixture must automatically attain the 7.4% value from any point on the broken line. (This may be confusing due to the fact that part of the broken line is above the solid one. Note that the throttle is only open a little ways here. Now, when you open it all the way the tendency is for the mixture ratio to drop. Therefore, means must be provided in the carburetor to prevent this.)

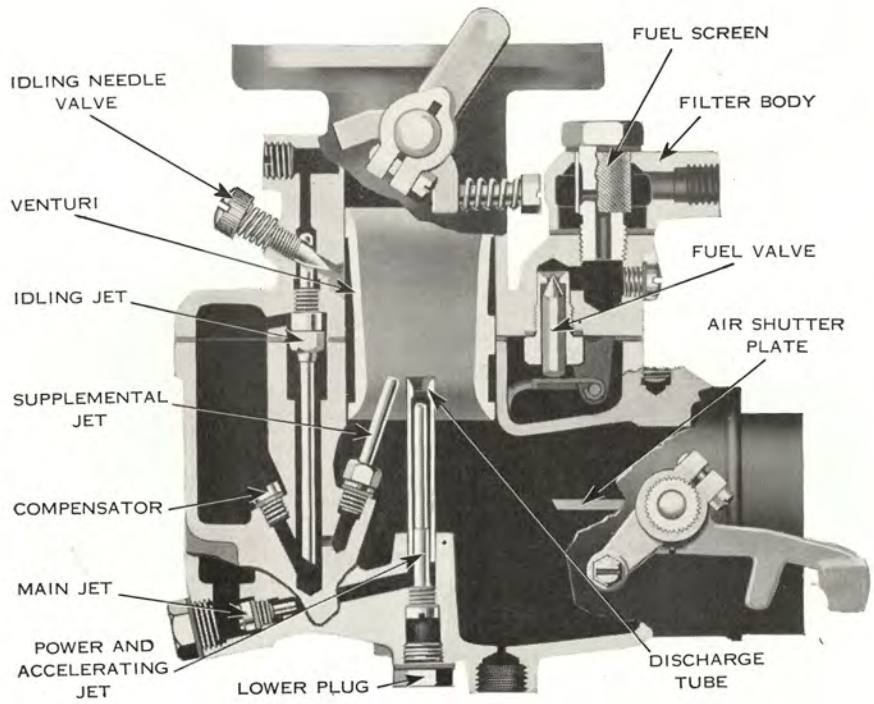



*Figure 8*

# Operation

The Zenith Compound Nozzle system of carburetion is used in this model. This consists of the **Main Jet,** directly connecting fuel in the bowl with the air stream through the **Discharge Tube;** and the **Compensating Jet** which flows into an open well connected with the air stream through the **Supplemental Jet.** The main jet flow varies with suction and delivers an increasing amount of fuel as the suction increases. The open well kills suction on the compensating jet so it flows the same under all suctions. In combination, the rich and lean jets give an average mixture of correct proportion.

Idling, acceleration and economizer action are provided by the idling and acceleration systems described in detail on the following pages.

**NORMAL RUNNING:** Refer to Figure 8. On part throttle operation (between idling and full power) the fuel is measured by the main and compensating jets, the former being more effective at higher and the latter at lower speeds. The air is measured by the **Venturi** and the fuel is carried into the air stream slightly above the venturi throat from the main and compensating jets by the discharge tube and supplemental jets, respectively. These jets are of such size as to give a very lean and economical mixture.

**IDLING:** The idling system consists of an **Idling Jet** and tube to supply the fuel, an **Idling Needle Valve** to correct the idling mixture and a channel to carry the mixture into the carburetor barrel at the edge of the throttle.

The desired idling speed is set by the stop screw on the throttle lever.

The idling system functions only while starting and idling. When the throttle is opened past the idling position the fuel goes the other way through the discharge tube and supplemental jet and the idling system is automatically out of operation.

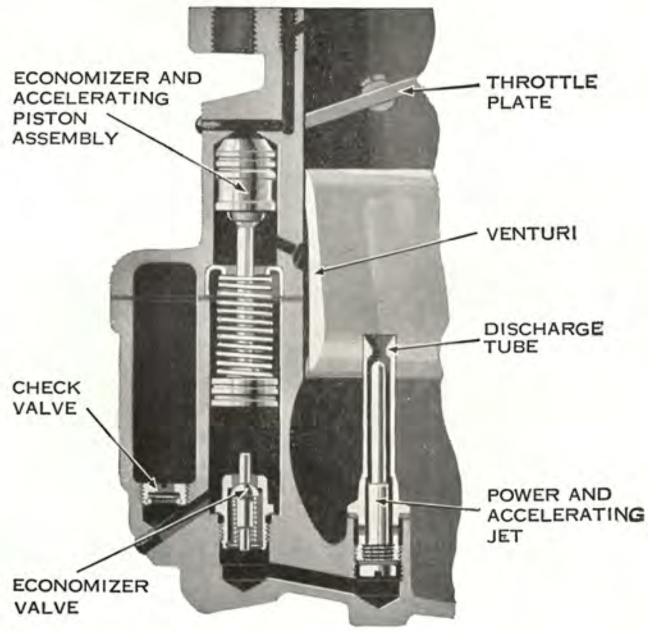



*Figure 9*

**FULL POWER AND ACCELERATION:** Full power, either for top speed or hard pulling, requires a richer mixture than part throttle operation. So does acceleration. See Figure 9.

This additional richness of mixture is provided by means of the accelerating and economizer system feeding through the **Power and Accelerating Jet,** its fuel stream merging with that of the main jet at the top of the discharge tube.

Under part throttle the suction (or vacuum) above the throttle is higher than when the throttle is open. This suction holds up the **Economizer and Accelerating Piston Assembly.** The **Check Valve** is open and the **Economizer Valve** is closed, thus shutting off fuel from the power and accelerating jet.

When the throttle is opened the suction falls, and so does the piston. The falling piston builds up a pressure below it, which forces the check valve to its seat thus preventing the fuel from being forced back into the bowl. The piston falls on the economizer valve, pushing it open, and the fuel displaced by the piston is forced out through the power jet. This is the accelerating charge.

If the throttle is held open the piston will remain at the bottom holding the economizer valve open. This allows fuel to continue flowing through the power and accelerating jet. This jet has a measuring hole in its tip which measures only enough additional fuel to develop full power.

When the throttle is partly closed the suction increases above it, the piston is drawn up to the top, the economizer valve closes and only a very economical amount of fuel can be fed to the engine.

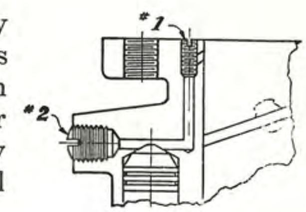



*Figure 10*

This system is so arranged that it can be used with a governor. See Figure 4. A suction channel is drilled straight down through the flange. Near the top a short drilling connects it with the inside of the carburetor barrel above the throttle. From the side another channel connects it with a ⅛″ pipe threaded boss to the outside.

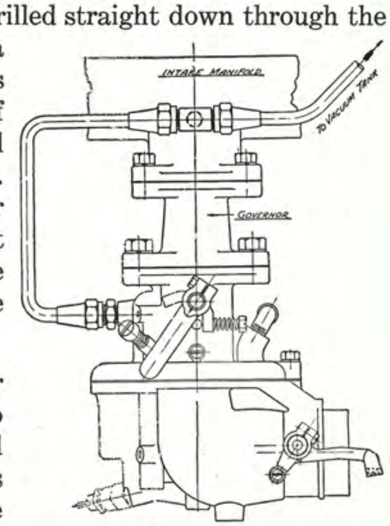



*Figure 11*

Without a governor the screw at the top (No. 1) is removed and a pipe plug (No. 2) is put in the boss. The suction is thus transmitted down through the vertical channel.

When a governor is used the carburetor throttle is wide open and the governor throttle regulates

the speed. It is necessary in this case to use the suction *above the governor throttle.* So we put No. 1 screw in place to shut off the short hole to the inside of the barrel; we fitted a 1/8″ pipe fitting in place of No. 2, from which a piece of tubing is run to a point in the manifold above the governor throttle. (See Figure 11, page 21.)

## Air Cleaner and Air Filter Restriction

Many air filters, now used on most gasoline engine carburetors, accumulate some or all of the dirt they separate from the incoming air. As this dirt builds up it has an action similar to closing the strangler valve. Both cause restriction and this increases the suction on the carburetor jets. Very little increase in suction is sufficient to create a mixture so rich that it will not only seriously impair engine operation but will also dilute the oil and cause as much wear as dirt.

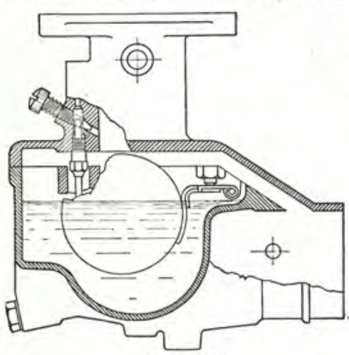


*Figure 12*

This is overcome in the Zenith Universal Carburetor by venting the fuel bowl from the air intake instead of the open air. So the strangler valve will actually "choke" for cold starting, it is located between the air duct and the carburetor barrel.

In the ordinary carburetor atmospheric pressure always exists in the fuel bowl, regardless of air intake restriction. In the Zenith Universal whatever pressure exists in the air intake also exists in the fuel bowl. In other words, these pressures are "balanced," and if the air intake is restricted, causing a lower pressure therein, the fuel bowl pressure will be equally reduced. In this way no additional fuel will be forced from the jets, the mixture ratios will remain normal and fuel consumption will be only very slightly increased.

The accompanying graph, Figure 13, on following page, shows plainly the effect of air cleaner restriction on mixture ratios from ordinary unbalanced and from Zenith Universal "balanced" carburetors.

The Zone of Maximum Power Mixture Ratios is shown to be between 7.2% and 8.6%. The balanced carburetor mixtures under various degrees of restriction and higher suctions stays within this full power, good running zone.

## Effect of Grades

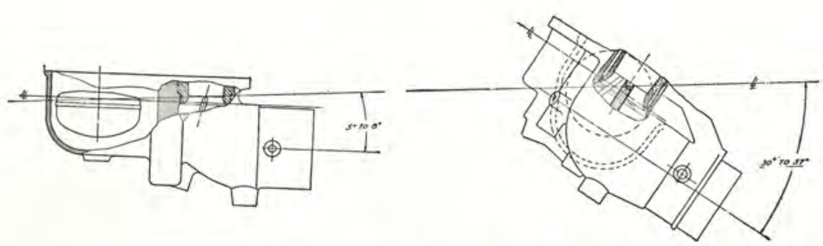
**HILL CLIMBING:** Relation of fuel level to jets is important. If the level is too high flooding might occur or, if not quite high enough to flood, the mixture will be rich. Similarly, if the level is too low the mixture will be lean. (See Figure 14.)

In the usual carburetor the bowl and barrel are offset from each other. If the carburetor is installed with the bowl to the front and the car is started up a gradually increasing grade it will be found that the fuel level will rise to the top of the jets when a 10% to 15% grade is encountered. This means a rich mixture and a sluggish engine. If the car is stopped on this grade flooding will take place.

If the carburetor were turned around, it would be lean, with lack of power when climbing, and would flood going down the same grade.

In the Zenith 150 Series carburetor the bowl closely hugs the *side* of the carburetor. Going up or down hills, even on a 65% grade, has no effect on the relative fuel level. It can be tipped sideways with the bowl up to an angle equivalent to a 30% grade and with the bowl down to one equivalent to better than a 100% grade.

This feature is very valuable for any car in a hilly country and for all trucks, etc., any place, because they work in and out of excavations, on ramps, etc., and are put on tipping platforms for unloading. Grades in these cases often run to 20% or more.



*Conventional Carburetor* *Figure 14* *150 Series Zenith Carburetor*

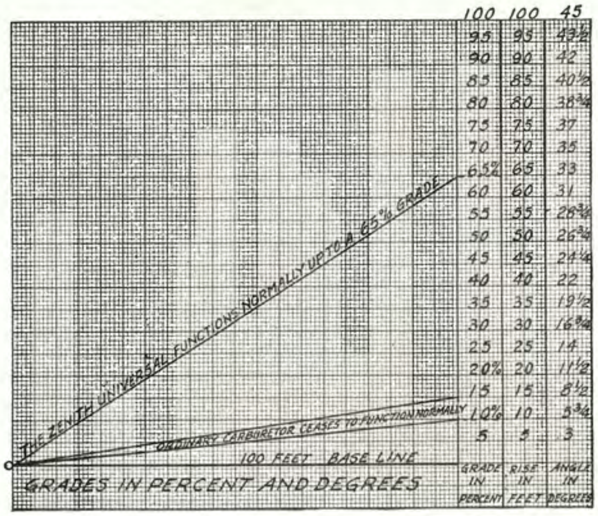



*Figure 15*

Figure 15 shows a Table of Grades. This is to scale so, if a line starting at zero is drawn to any point on the right hand border it will give a profile view of a grade of that value.

Note that grade percentage values indicate the number of feet rise in a horizontal distance of 100 feet, and that a 45° angle is equivalent to a 100% grade

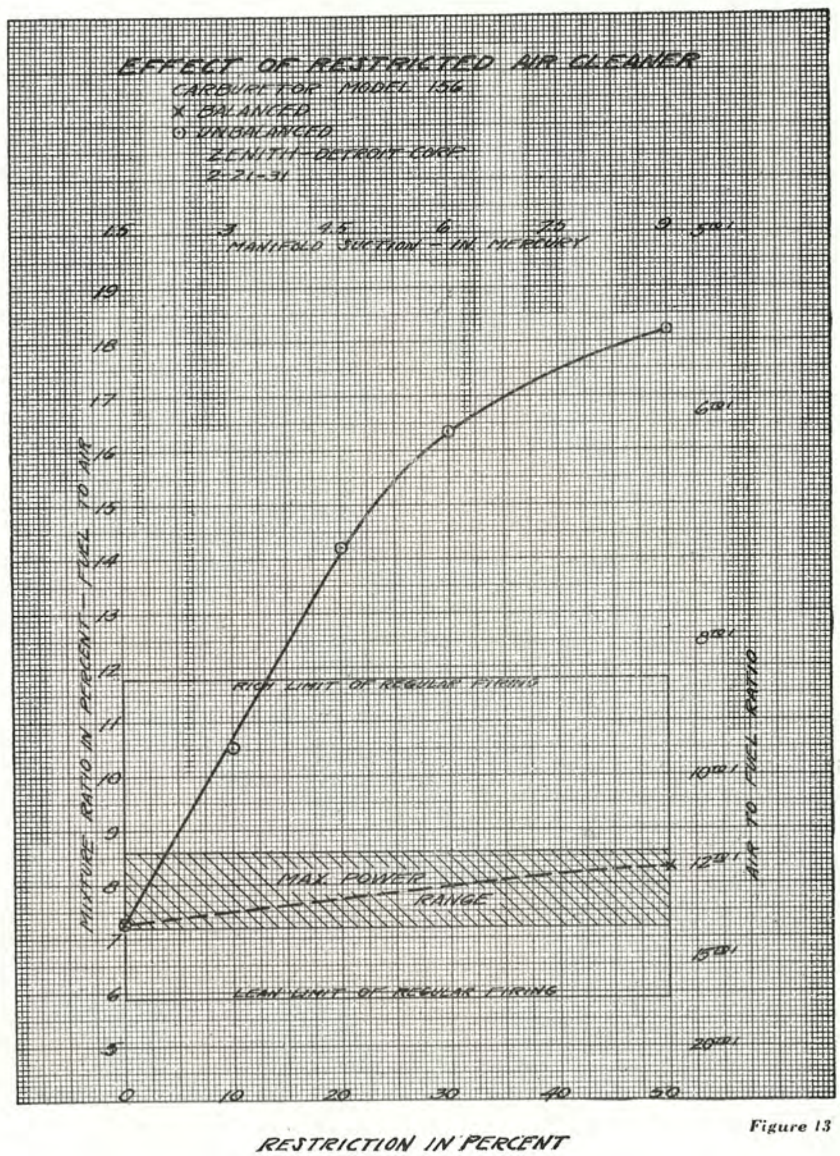



*Figure 13*

With an unbalanced carburetor the mixture gets rapidly richer if the air cleaner becomes clogged. With only a 4% restriction it is at the high limit of maximum power range and at only 13% restriction it reaches the limit of regular firing. At 20% the engine would hardly run and if it did it would throw off black smoke and cause oil dilution. In fact, at any point above a 9% mixture with wide open throttle, danger of dilution exists and power will fall off rapidly.

# Zenith Carburetor Model 324½

The construction of this carburetor is shown in the accompanying illustrations. Figure 1 shows the principal jets. The Idling Jet (1) measures the fuel for idling speeds. (The air for idling is regulated by the Idling Adjusting Needle shown as (7) in Figure 2.) This idling system functions only when the Throttle Plate (3) is almost closed, causing a very strong suction on the priming hole at the edge of the throttle plate.

The Compensating Jet (4) is the source of fuel supply to the idling jet and, as the throttle plate is opened to permit higher engine speeds, the fuel from the compensating jet flows out through the Cap Jet (5). This flow remains constant, even

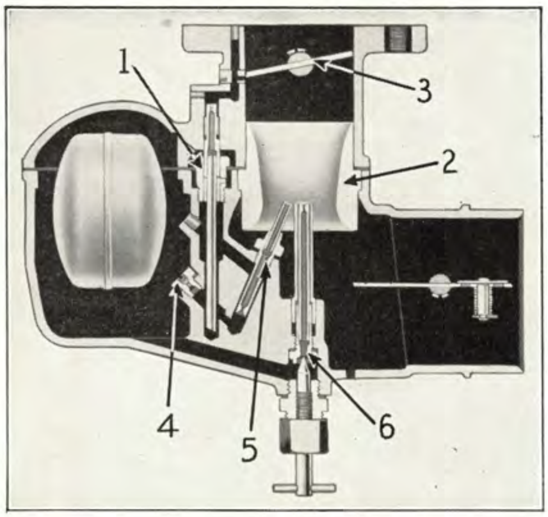



*Figure 1*

though engine speeds increase, due to the admission of air through ventilation channels.

The Main Jet (6) is the high speed jet and exerts its greatest influence at higher engine speeds. It is a direct suction jet and its flow increases with the flow of air. Its size is determined to give economical operation. Combining the characteristics of this jet with those of the compensating jet, you obtain a correctly proportioned mixture. The Venturi (2) is the air metering nozzle and determines the maximum volume which may be passed through the carburetor.

Maximum power for full speed and acceleration requires more fuel than regularly furnished by the main jet and this *additional* fuel is added, only when needed, through the Power and Accelerating Jet

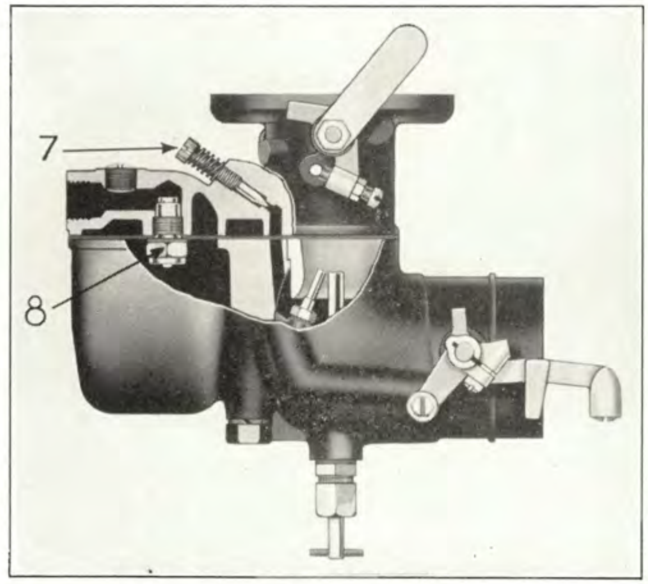



*Figure 2*

system. Refer to Figure 3. When the manifold vacuum is low, as when the throttle is opened quickly or when high engine speeds prevail, the Economiser Piston Assembly (9) drops in its cylinder and forces fuel through the Economiser Valve (10). The Power and Accelerating Jet (11) measures the rate of discharge of this fuel which passes into the air stream through the Discharge Tube (12).

As long as the vacuum is low, this flow of fuel continues but when the vacuum increases, the piston

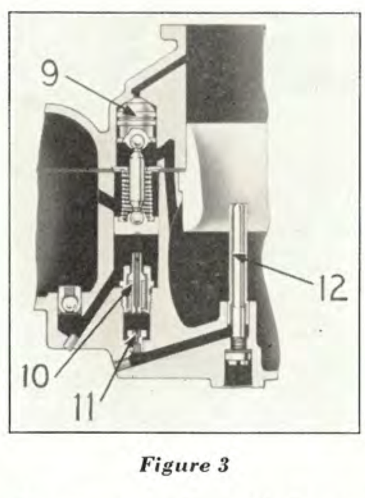



*Figure 3*

assembly is drawn up in its cylinder and the extra fuel is eliminated by the closing of Valve (10). This system of fuel control results in greater economy.

# Zenith 23 Series Carburetors
## (Downdraft Type)

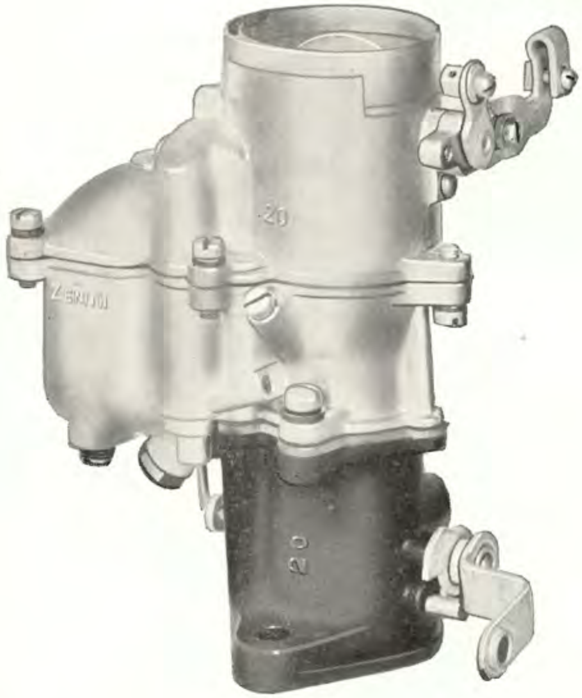


*Figure 1*

Zenith carburetors have always set the standard for rugged construction and durability, which qualities are particularly essential in downdraft units. While live rubber engine mountings eliminate the transmission of vibrations to body and chassis, they present difficulties to the carburetor manufacturer which can be met only with special float construction.

The Zenith 23-Series carburetor has been especially designed to meet every condition encountered in downdraft carburetion. This includes provisions in design that insure positive, smooth idling, elimination of over-choking and other difficulties already known to many users of downdraft carburetors not so designed.

The Zenith 23-Series carburetor is a fully balanced, downdraft instrument incorporating an enclosed Mechanical Accelerating Pump and Vacuum (or Mechanical) Economizer System, Special Float Construction and other important features. Dirty air cleaners do not affect the mixture ratio. Marked accelerative ability, smoothness of operation, great range, flexibility and generally excellent operating characteristics are combined with good material and rugged construction to make an ideal unit for any class of equipment.

### Operation

The Zenith Compound Nozzle system is used. This consists of two jets: the Main Jet (2) and the Compensating Jet (3). (see Figure 2). The main jet flow varies with suction. Its tendency is to richness at top engine speed. The compensating jet, unaffected by suction, has a tendency to leanness at top engine speeds. In combination, the rich and lean jets give an average mixture of correct proportions. To these we have added a Power Jet (5) which operates only when extra fuel is needed for development of maximum power.

Under part throttle the suction (or vacuum) on the manifold side of the throttle is higher than when the throttle is wide open. This suction holds up the power jet piston assembly (17), permitting the power jet valve (18) to remain closed, thus shutting off fuel from the Power Jet (5).

When the throttle is opened the suction decreases, permitting the power jet piston to be opened by the pressure of its spring. The falling piston opens the power jet valve, permitting fuel to flow to the power jet which is sized to measure only enough additional fuel to develop full power.

Acceleration (see Figure 3) is provided for by a pump which is controlled by movement of the

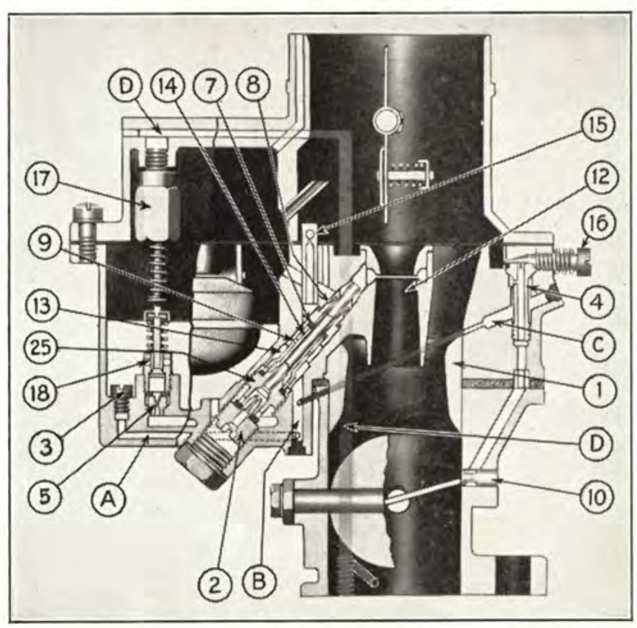



*Figure 2*

throttle. The downward stroke of the pump piston (11) forces fuel from the pump cylinder into the air stream through the Accelerating Jet (6). This furnishes the necessary additional fuel for flashy acceleration. An air vent is provided between the pump and discharge opening, controlled by a check valve (23) to prevent the accelerating jet from supplying fuel except during the downward movement of the piston.

An Idling Jet (4) (see Figure 2) meters the fuel for idling while an Idling Adjusting Needle (16) controls the volume of air. The Idling Tube carries this mixture to the discharge opening at the edge of the throttle plate. Idling speed is regulated by the throttle stop screw.

In starting, the idling system acts as a priming device. With the throttle only slightly opened there is a strong suction on the idling system. Fuel passes at high velocity over the edge of the throttle plate and is instantly vaporized as it mixes with the air stream.

It is especially important to avoid over-choking in downdraft carburetion.

Zenith uses a strangler with a by-pass valve which opens or closes with varying engine speeds, furnishing a combustible mixture until engine temperatures permit opening the strangler.

The strangler shaft is off center so it may be satisfactorily operated by the automatic choke assemblies now used on many cars.

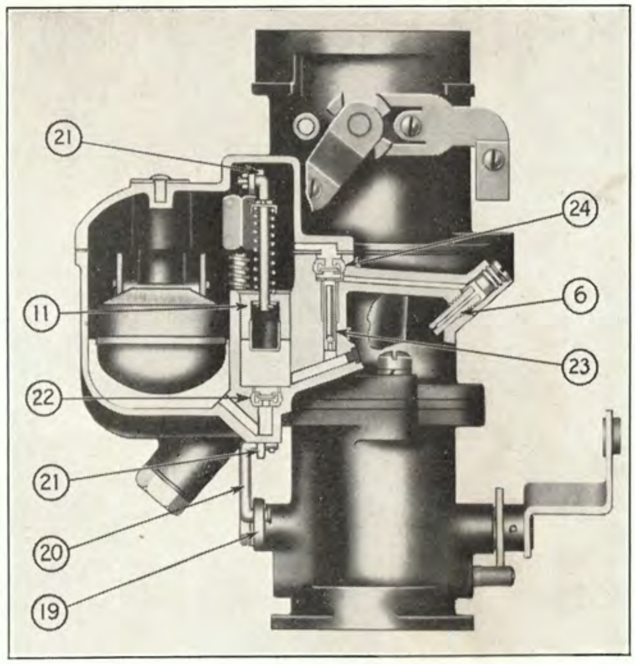



*Figure 3*

# Protect Good Carburetion from Dirt and Water

No carburetor can deliver the finest performance if dirt and water are permitted to accumulate in the carburetor or fuel lines. Ordinary screens are not fine enough to keep out water and tiny particles of dirt. There is one positive protection—Zenith Fuel Filters. Remember they are *not just another screen* but made up of a series of discs and spacers. The filtering openings are only .002 of an inch and water will not pass through so long as gasoline is present.

We show below five units.

1. A single element type which can be inserted in any glass bowl type of A. C. Fuel Pump.
2. A double element type for any glass bowl type of A. C. Fuel Pump. This assembly will run over twice as long before requiring cleaning.
3. A self contained Finishing Filter, designed for attaching directly to carburetor or fuel pump.
4. Similar to number 3 but with an element twice as long which requires less frequent cleaning.
5. Heavy Duty Filter for larger trucks, buses, etc.; has two separate filter elements; ¼″ pipe tap inlet and outlet.

5

1

2

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